

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference:
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/050635

International filing date (day/month/year)
28.04.2004

Priority date (day/month/year)
29.04.2003

International Patent Classification (IPC) or both national classification and IPC
G03F7033, B41M1/04

Applicant
KRATON POLYMERS RESEARCH B.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses a Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see form PCT/ISA/220.

2. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/050635

Box No. 1 Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2004/050635

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement:

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations:

see separate sheet

Re Item V.

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: US 6 531 263 B2

D2: WO 02 057386 A

The document US 6 531 263 B2 (D1), which is considered to represent the most relevant state of the art, discloses a photopolymerizable composition (see claims 1-7) which comprises:

- (a) a mixture of thermoplastic-elastomeric copolymers (i.e. styrene-isoprene-styrene (SIS) and styrene-butadiene-styrene (SBS),
- (b) ethylenically unsaturated monomers,
- (c) a photoinitiator, and
- (d) a plasticizer.

The subject-matter of present claim 1 differs from D1 in that component (a) is a thermoplastic-elastomeric S(I/B)S copolymer, wherein isoprene (I) and butadiene (B) are incorporated into the elastomeric block, which S(I/B)S copolymer further has a collection of features as recited in present claim 1.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as the provision of a photopolymerizable composition which shows an improved combination of processing stability, low melt viscosity and transparency while the flexographic printing plate derived from it also shows an improved combination of transparency and Shore A hardness (see page 6, paragraph 12, of the present description).

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The tests described in Table 7 on page 16 of the present description clearly show that the present specific thermoplastic-elastomeric copolymers give transparent rubber plates, as compared to plates made from a mixture of thermoplastic-elastomeric styrene-isoprene-styrene and styrene-butadiene-styrene block copolymers. The content

of Table 8 on page 17 also demonstrates the superior transparency of the S(I/B)S based photosensitive compositions, as compared to formulations based on mixture of SIS with SBS polymers.

Although document WO 02 057386 A (D2) already suggested the use the present specific thermoplastic-elastomeric S(I/B)S copolymer in the preparation of printing plates, the latter document only mentioned that these *"copolymers combine nicely in one molecule the advantages of each individual grade"*, said advantages of the S(I/B)S copolymer being defined with respect to the relative hardness and UV reactivity of the individual SBS and SIS copolymers (see page 11, lines 20-35, and page 12, lines 1-4).

On the other hand, D2 is totally silent about transparency of the flexographic printing plate. Since nothing has been found in D2, which would have led the skilled person to use the present S(I/B)S copolymer in order to improve transparency of the printing plate, the subject-matter of present claim 1 can be considered as involving an inventive step.

Claims 2-10 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.